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LISTS OF SPECIES

Fishes of the Salonga National Park (Congo basin, central Africa): A list of species collected in the Luilaka, Salonga, and Yenge Rivers (Equateur Province, Democratic Republic of Congo)

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ABSTRACT: A list of fishes collected in and around the periphery of the Salonga National Park in Equateur Province of the Democratic Republic of Congo is provided. While noteworthy for a wide array of rare and endangered terrestrial vertebrates, the fish fauna of the Salonga National Park, the largest protected area in Africa, is very poorly known. One hundred and fifty two species distributed in 24 families are reported on here; of which 9 represent putatively undescribed taxa currently under investigation. Lack of up-to-date taxonomic and distributional knowledge of African fishes is particularly acute in the central Congo basin and the present report, while undoubtedly incomplete, provides a foundation for much needed further work in the region.

INTRODUCTION

Created by presidential decree in 1970, the Salonga National Park (SNP) is the largest tropical rainforest preserve in Africa (UNESCO 2012). Covering an area of ca. 36,000 km^2, the SNP is entirely located within the sedimentary "cuvette centrale" of the Congo basin (Evrard 1968), where it is divided into two large forest blocks, each delimited by major waterways (Figure 1). Most of the park is situated about 300 meters above sea level with more-or-less continuous low relief cut by broad, meandering rivers with extensive seasonally flooded, or permanently inundated, riparian zones. The climate is equatorial, hot and humid, with an average annual temperature of 25.5°C, and rainfall of around 1800-2200 mm per year (Hughes and Hughes 1992). The densely forested landscape (Figure 2A) encompasses a large and complex aquatic network that traverses much of the terrestrial area of the park. Despite the high importance of the region's fishes for food security and to the local economy, most of the SNP remains remarkably poorly documented ichthyologically. This is undoubtedly a serious impediment for fisheries management in the region, where increasing fishing pressure, and the use of highly destructive fishing techniques is of growing concern both outside and inside the park's boundaries (Inogwabini 2005; pers obs.).

For fishes, a single reference (Inogwabini 2005) reports on 56 species collected at two sites in the SNP; one in the northern block at Etate on the Salonga River, and the second in the southern block at Lokofa on the Luilaka River. Historical literature for the area is equally sparse. Matthes (1964) reported on a series of collections from around Ikela (a settlement on the Tshuapa River some 270 km west of Etate; Figure 1) and that work remains the primary published reference for the entire region. However, a recent assessment of the status and distribution of fishes throughout central Africa (Stiassny *et al*. 2011) provides useful comparative data. That IUCN assessment compiled point data from legacy collections housed in major museums (Darwell and Smith 2011), and in particular the large historical holdings of fishes from collections made around Mbandaka, Boende, and Ikela (Figure 1) housed at the Africa Museum, Tervuren, and these provide the best available comparative data for fishes in the vicinity of the SNP.

MATERIALS AND METHODS

The list of species provided here is based on collections made during three field expeditions to the SNP and adjacent regions: the first, from July 3-August 3, 2006 (during the main low water season), the second from October 28-November 17, 2007 (during the primary flood season), and the third between May 19-May 28, 2010 (towards the end of the secondary flood season). Transportation within the SNP is restricted to passage along waterways in local pirogues. Due to difficulties of access, collecting was primarily restricted to main channel sites and only a few collections were made in peripheral habitats, or in the many small tributaries and affluent streams. Sites were selected to sample accessible regions of the main river channels, both inside and outside of the SNP, and subjected to varying degrees of anthropogenic impact, from pristine (e.g., Figure 2B) to marginally degraded and heavily fished (e.g., Figure 2C). Fifteen sites along a total stretch of approximately 650 km of the Luilaka, Salonga and Yenge Rivers are reported on (Table 1, Figure 1).

Fishes were collected and euthanized prior to preservation in accordance with recommended guidelines for the use of fishes in research (AFS/AIFRB/ASIH 2003). All materials are housed in the Ichthyology Department of the American Museum of Natural History (AMNH), New

York with a database accessible at http://entheros.amnh.org/db/emuwebamnh/.

Notes on Collection Sites

Sampled sites share similar physical characteristics, being situated along the banks of the heavily forested Salonga, Yenge, and Luilaka Rivers, with most in seemingly pristine condition. The waters of all three rivers are tea-colored, highly humic, and notably acidic, with low dissolved oxygen and conductivity (Table 2). The Luilaka River, which delimits the northern boundary of the SNP southern block, has an average width of 45 m, varying from 30-60 m between Ifumu (Site 1) and Ikala (Site 9). Depths at collection sites range between 2-10 m (depending on season), the substrate is predominately fine mud, sand, and detritus, with strong flow in the main channel, particularly during the dry season when waters are restricted within the river channel. At its maximum extent, the zone of inundation rarely reaches more than 100 m into the forest on either side of the main channel. The Salonga River has an average width of 60 m, but varies from 40-80 m between Etate (Site 14) and Bomputu (Site 15). Depths at collection sites varies from 3-11 m (depending on season), again with water flow strongest in the main channel during the dry season. The substrate consists primarily of sand, fine mud and detritus, with many large sand bars exposed in the dry season. During the height of the rainy season a zone of inundation of about 100 m extends into the forests on either side of the main channel. The Yenge River, a large left bank tributary of the Salonga, is located entirely within the SNP. Although the smallest of the three rivers sampled in terms of channel width, the zone of inundation of the Yenge is by far the greatest, with waters reaching upwards of 400 m into the forest during the height of the rains. Site 3 (Boangi, Figure 2C), Site 11 (Efofa, Figure 2F), and Site 15 (Bomputu, Figure 2H) are located near village docks, with evidence of forest clearing (mainly for housing and fishing hut construction), and with grassy banks replacing riparian vegetation.

Figure 1. Coordinates and site data.

Site	Locality	Coordinates	Main River Channel	Cover
1	Ifumu	1°47’31° S, 20°41’18° E	Luilaka	Dense forest, undisturbed
2	Bekongo	1°54’42° S, 20°51’11° E	Luilaka	Dense forest, undisturbed
3	Boangi	1°55’19° S, 20°52’56° E	Luilaka	Dense forest, some localized disturbance
4	Kema Asondji	2°2’12° S, 20°59’48° E	Luilaka	Dense forest, undisturbed
5	Bosombangwa	2°13’27° S, 2°11’6° E	Luilaka	Dense forest, undisturbed
6	Ikala (confluence with Lofombo)	2°36’47° S, 21°13’32° E	Luilaka	Dense forest, undisturbed
7	Mboko Mboko	2°30’45° S, 21°22’1° E	Luilaka	Dense forest, undisturbed
8	Ilenge	2°35’47° S, 21°34’36° E	Luilaka	Dense forest, undisturbed
9	Komba Dumbe	2°40’15° S, 21°43’15° E	Luilaka	Dense forest, undisturbed
10	Watshikengo	0°54’45° S, 2°32’15° E	Salonga	Dense forest, undisturbed
11	Efofa	1°1’48° S, 20°43’41° E	Yenge/Salonga confluence	Dense forest, some localized disturbance
12	Yenge 1	1°2’45° S, 20°43’59° E	Yenge	Dense forest, undisturbed
13	Boyenga	1°3’50° S, 20°44’44° E	Yenge	Dense forest, undisturbed
14	Etate	1°3’18° S, 20°48’38° E	Salonga	Dense forest, undisturbed
15	Bomputu	0°28’5° S, 20°8’32° E	Salonga	Dense forest, some urbanization and disturbance

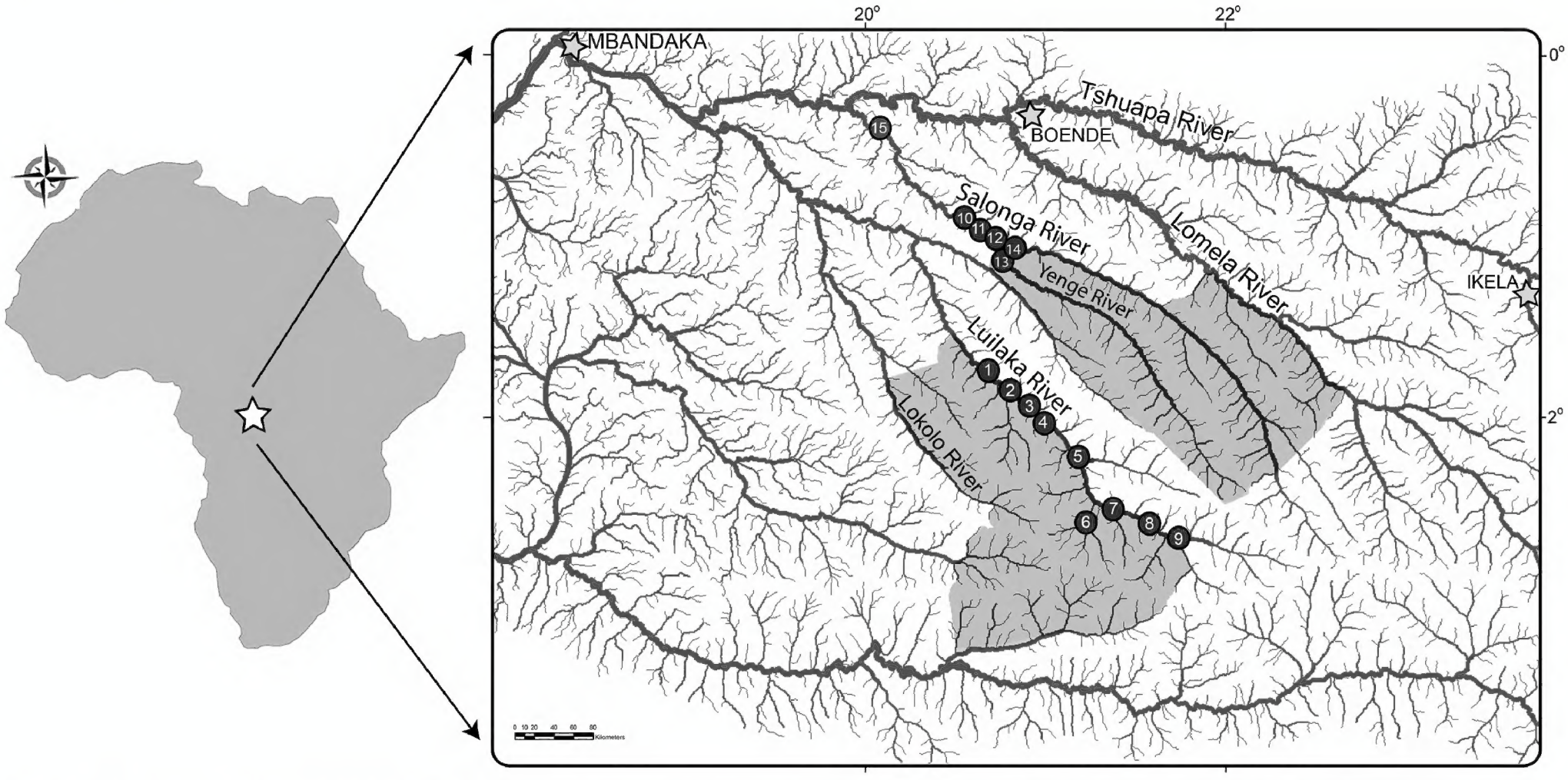

Figure 1. The Salonga National Park (shaded grey) and associated drainages in Central Africa, with the locations of Sites 1-15 indicated.

Fish sampling

Standard fishing techniques were employed (Lang and Baldwin 1996), and included deployment of monofilament gill nets, traps, dip nets, cast nets, hook and line, and locally made barrage traps (Figure 2H). Additional specimens were purchased from fishermen along the river and at village markets.

Taxonomic nomenclature used herein is based primarily on Eschmeyer (2012) but with a few modifications to reflect recent taxonomic changes. All fishes were collected and exported with permission of the République Démocratique du Congo, Ministère de l'Environnement, Conservation de la Nature, Eaux et Forêts, Direction des Ressources Faunistiques et Chasse (Permit #'s 004/SG/ECN-EF/DRFC/06 and 002/SG/ECN-EF/DRFC/08), and the Ministère de l'Agriculture, Secrétariat Général à l'Agriculture, Pêche et Elevage, Direction des Pêches (Permit # 003/2010), which are on file at AMNH.

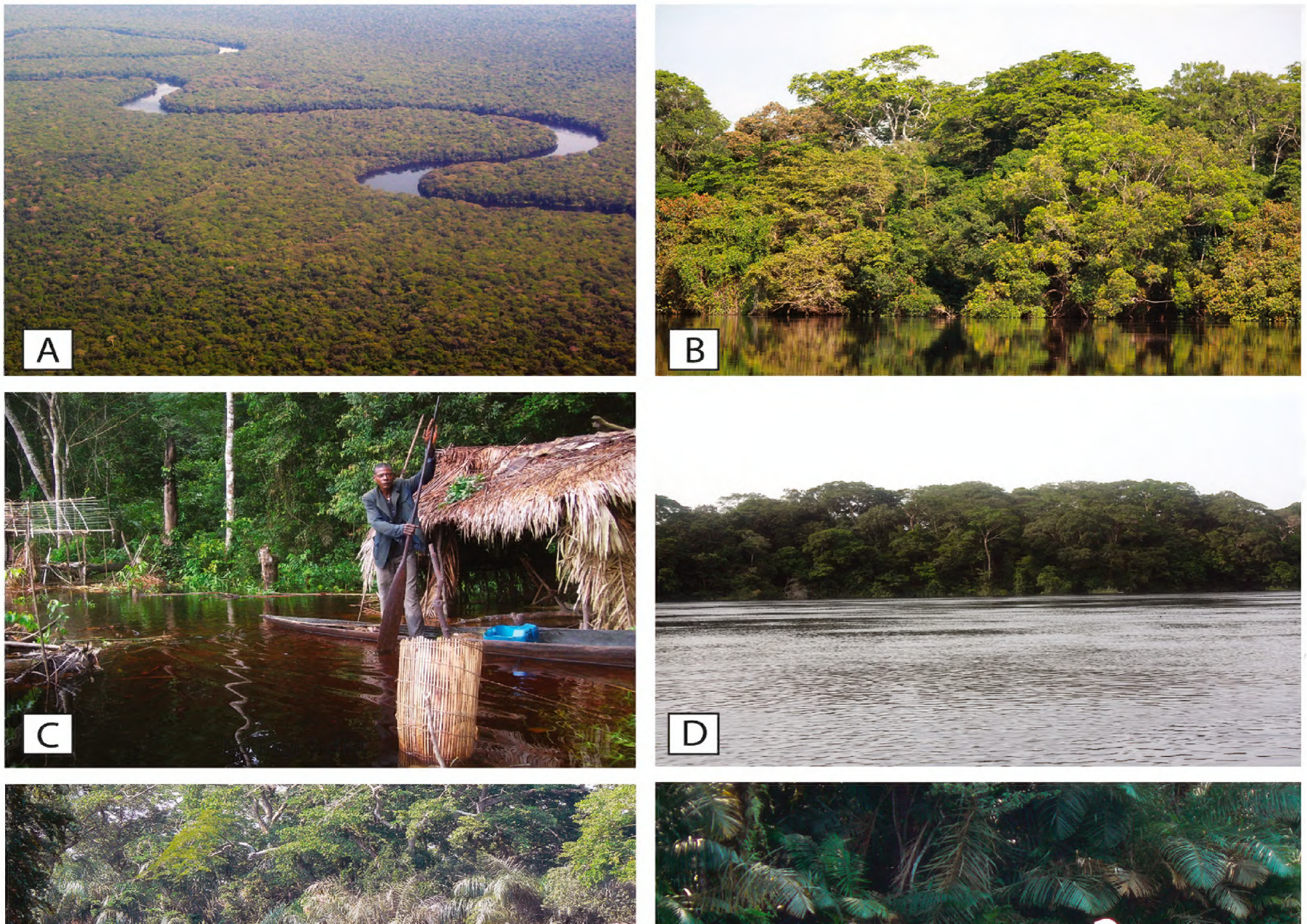

Figure 2. Selected localities: A) View of SNP from the air near Site 1, Ifumu; B) Site 2, Bekongo; C) Site 3, Boangi; D) Site 4, Kema Asondji; E) Site 7, Mboko Mboko; F) Site 11, Efofa; G) Site 14, Etate; H) Site 15, Bomputu.

Results and Discussion

A total of 2582 individuals belonging to 152 species, distributed in 24 families and 8 orders are represented in Table 2, with their distribution among sites indicated in columns 1–15. In column 16, distribution data from an IUCN assessment of the status and distribution of central African fishes (Brooks *et al.* 2011) are used to indicate which SNP species have previously been known to occur in the vicinity of the park. While comparative data are minimal for the rivers of the SNP itself, Brooks *et al.* (2011) do provide data on the region's fishes, mostly with historical records from around Mbandaka on the Ruki River, and Boende and Ikela on the Tshuapa River, thereby providing the best available comparison for the SNP list provided here.

Based on these data we recognize 33 species that have not previously been recorded from the central cuvette of the Congo basin (exclusive of the main channel of the Congo River), or are known only from isolated regions distant from the rivers of the SNP. Most of these species (Table 3, column 16) represent range extensions within the Congo basin, and a selection of them is illustrated in Figures 3–5. While the present study has significantly increased the number of species known to occur within the boundaries of the SNP, with few exceptions, the species reported on here are widespread in the region and many occur throughout much of the rain forested central Congo basin. Regional endemism is seemingly low, possibly due to the extent of currently interconnected, and densely forested habitat throughout most of the cuvette (Chapman 2001), or as a result of repeated climatic shifts resulting in fluctuating forest contraction and expansion since the Middle Pleistocene (Campbell 2005). Despite the predominance of widespread species in our collections, a number of specimens collected during the course of the present study are not assignable to currently described taxa, and appear to represent undescribed species, indicating that significant regional endemism may remain to be discovered. A selection of these is illustrated in Figures 6–7, and includes a specimen of psammophilous, dorso-ventrally depressed, and depigmented clarioteid catfish (Figure 6A), that belongs to a new genus endemic to the Congo basin (Sullivan, pers. comm.). It is noteworthy that, with the exception of the *Alestopetersius* (Figure 6B) and *Eugnathichthys* (Figure 6C) species, most of the specimens unassignable to known species are of small size (Figure 7), and were collected in marginal habitats rather than in the main river channels. As noted previously, most collecting effort was focused in the main river channels and sampling in the many small affluent streams, black water swamps, and peripheral habitats was minimal. Therefore, while the present study represents the best available tally for the SNP and its immediate vicinity, targeted collecting in these marginal habitats will be necessary to provide a fully comprehensive listing for the park, and an accurate assessment of the actual levels of endemism in the region.

Table 2. Water chemistry data.

Parameter (averaged over sites)	Salonga River sites	Yenge River sites	Luilaka River sites
Air T° C	25	25	24.8
Water surface T° C	24	23.6	23.8
Turbidity (FTU)	13	11.4	12.3
Transparency (cm)	60	55	58
Depth at site (m)	7.2	5.9	6.5
pH	4.8	4.8	4.9
Conductivity (µs/cm)	26	22	24
0_2 (mg/l)	2.1	2.4	2.8
K^+ (mg/l)	0.28	0.3	0.3
Ca^{2+} (mg/l)	0.22	0.21	0.2
Mg^{2+} (mg/l)	0.16	0.22	0.21
Cl^- (mg/l)	1.4	2.4	1.6
SO_4^{2-} (mg/l)	1.1	1.2	1.0
NO_3^- (mg/l)	0.4	0.8	0.5
PO_4^{3-} (mg/l)	1.25	1.7	1.5

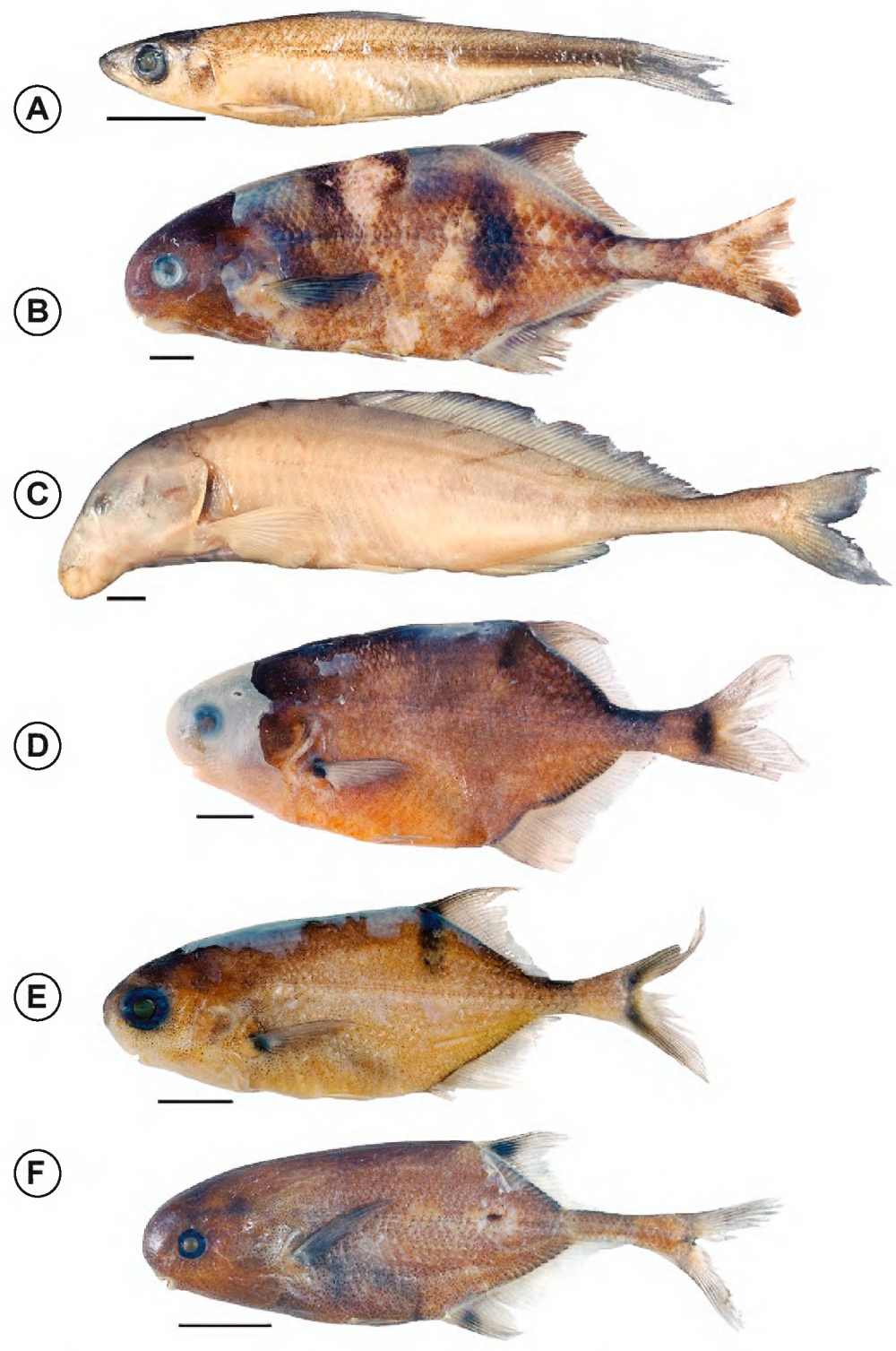

Figure 3. Species whose occurrence in the SNP represents a significant range extension within the Congo basin: A) *Potamothrissa obtusirostris*, B) *Cyphomyrus weeksii*, C) *Mormyrus caballus*, D) *Petrocephalus odzalaensis*, E) *Petrocephalus zakoni*, F) *Pollimyrus maculipinnis*. Scale bars: 1 cm.

FIGURE 4. Species whose occurrence in the SNP represents a significant range extension within the Congo basin: A) *Clupeocharax schoutedeni*, B) *Hemigrammocharax uniocellatus*, C) *Nannocharax elongatus*, D) *Hemigrammocharax ocellicauda*, E) *Clypeobarbus bomokandi*. Scale bars: 1 cm.

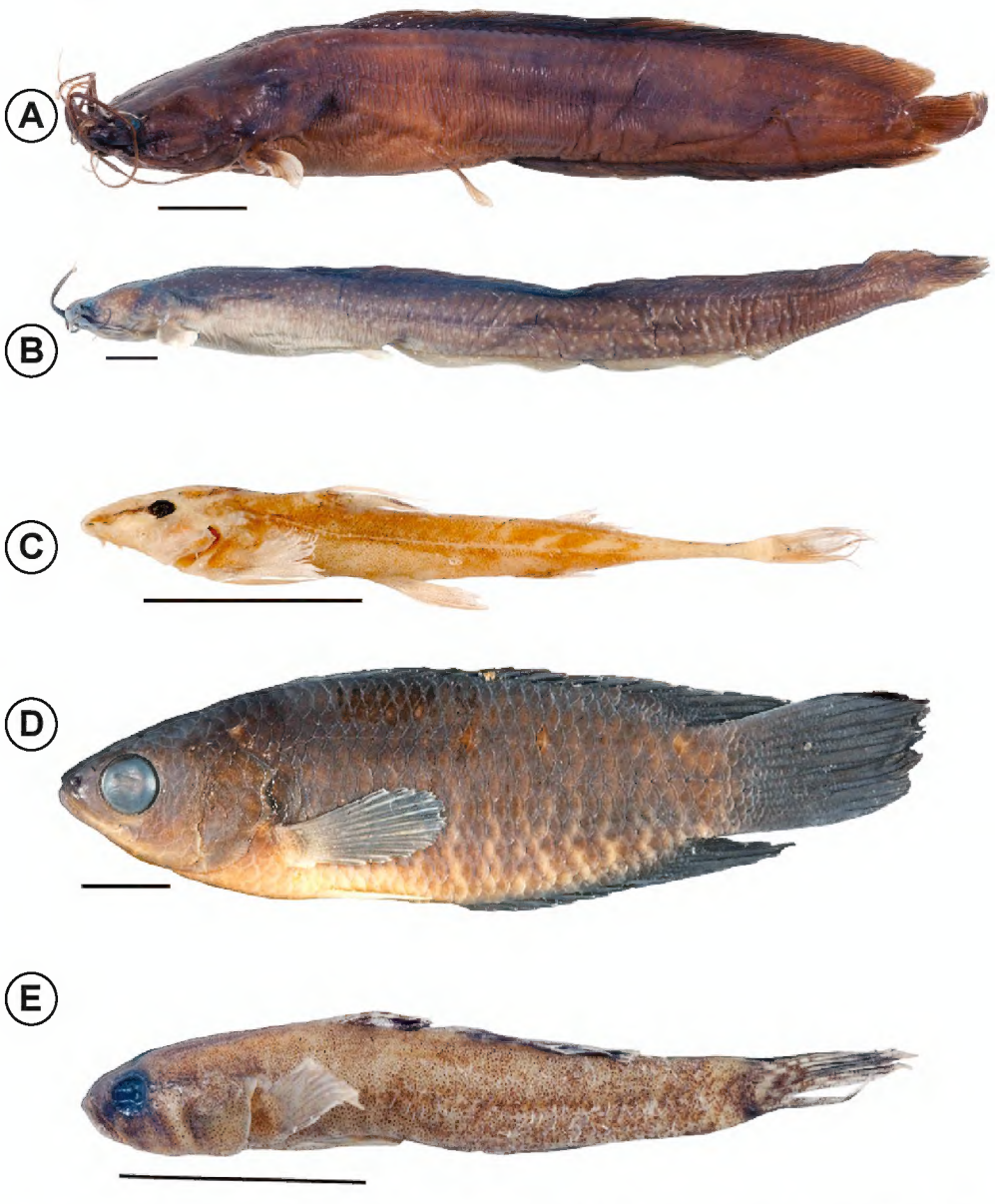

FIGURE 5. Species whose occurrence in the SNP represents a significant range extension within the Congo basin: A) *Clariallabes teugelsi*, B) *Clariallabes variabilis*, C) *Phractura lindica*, D) *Ctenopoma gabonense*, E) *Kribia uellensis*. Scale bars: 1 cm.

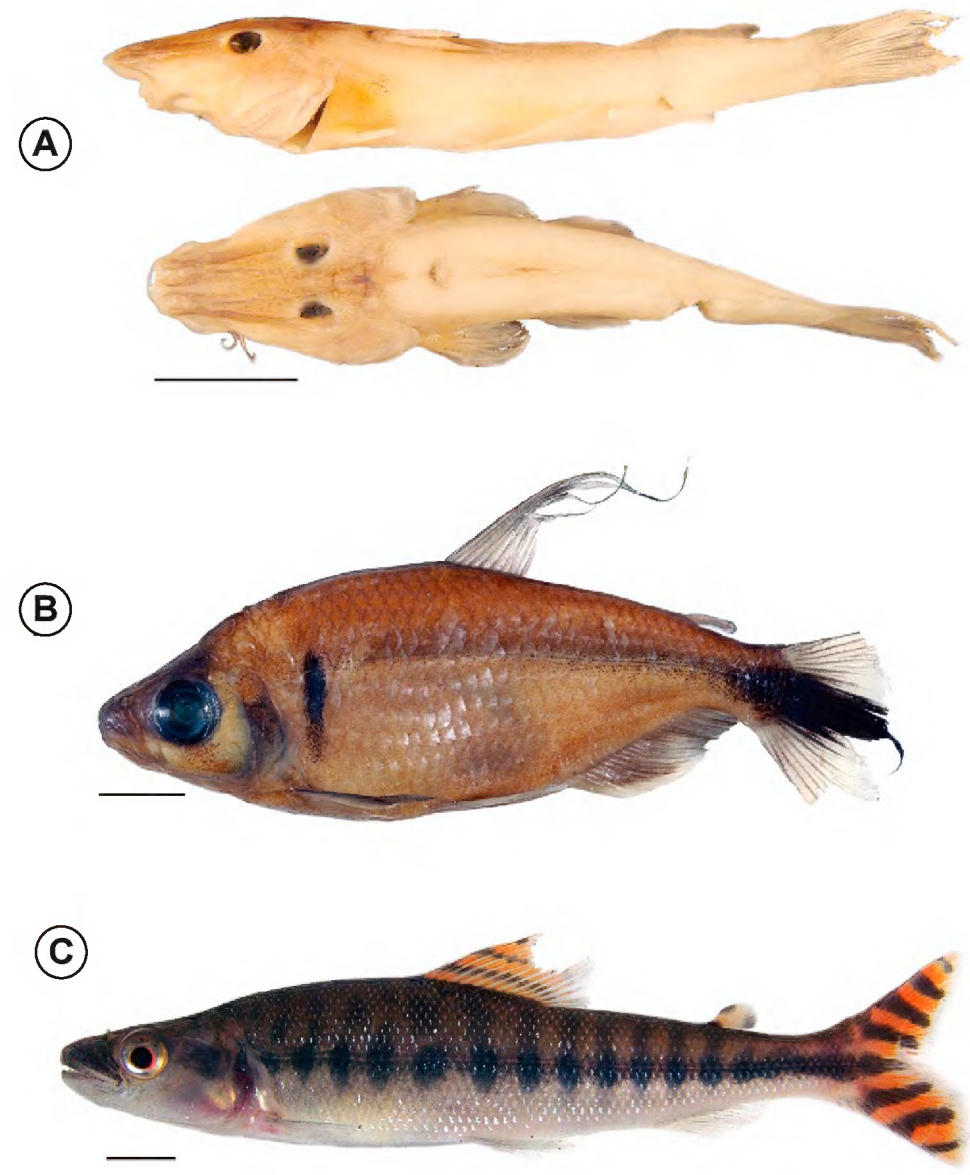

FIGURE 6. Undescribed species from the region: A) "Salonga glass catfish" (Claroteidae, new genus and species), in lateral and dorsal views, B) *Alestopetersius* sp., C) *Eugnathichthys* sp. Scale bars: 1 cm.

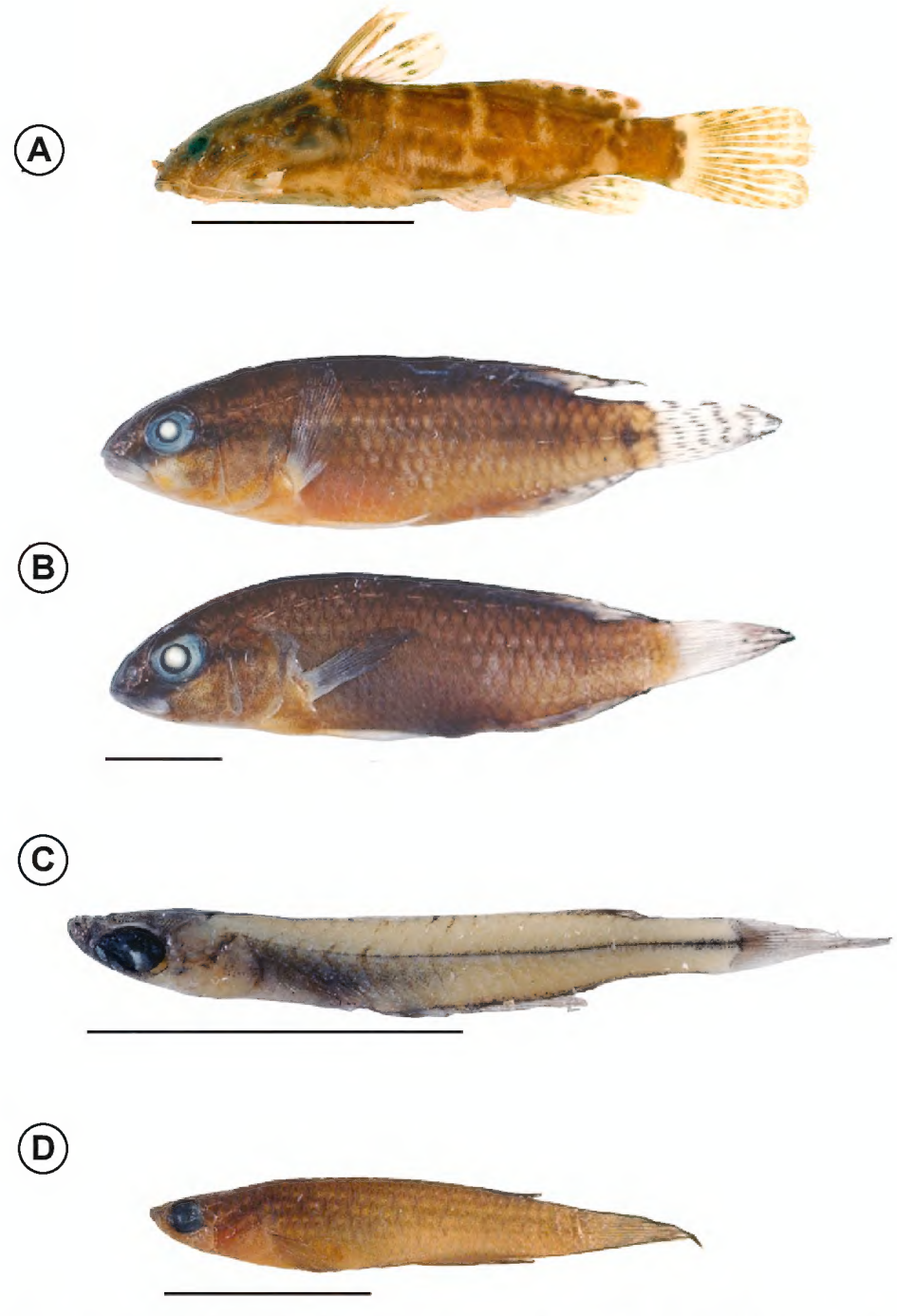

FIGURE 7. Undescribed species from the region: A) *Microsynodontis* sp., B) *Congochromis* sp., male above, female, C) *Hylopanchax* sp., D) *Fenerbahce* sp. Scale bars: 1 cm.

Table 3. List of species collected at sites 1-15 along the Luilaka, Salonga and Yenge Rivers (Salonga National Park). In column 16 distribution data culled from an IUCN assessment of central African fishes (Brooks *et al.* 2011) indicates which of the reported SNP species have previously been known to occur in the region.

	AMNH Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LEPIDOSIRENIFORMES																	
Protopteridae(1)																	
Protopterus dolloi Boulenger, 1900	observed	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x
POLYPTERIFORMES																	
Polypteridae (4)																	
Polypterus delhezi Boulenger, 1899	AMNH 244188	-	-	-	-	-	-	-	-	-	-	-	-	x	-	-	x
Polypterus retropinnis Vaillant, 1899	AMNH 241931, 252229	x	-	-	-	-	-	x	-	-	-	-	-	-	-	-	x
Polypterus weeksii Boulenger, 1898	AMNH 244079, 244080	x	-	-	x	-	-	-	-	-	-	-	-	-	-	-	x
Polypterus ornatipinnis Boulenger, 1902	observed	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x
CLUPEIFORMES																	
Clupeidae (1)																	
Potamothrissa obtusirostris (Boulenger, 1909)	AMNH 242757, 244086	x	-	-	x	-	x	-	-	x	x	-	x	x	-	-	-
OSTEOGLOSSIFORMES																	
Pantodontidae (1)																	
Pantodon buchholzi Peters, 1877	AMNH 241938, 252185	x	x	x	-	-	-	-	-	x	-	-	x	x	-	-	x
Notopteridae (2)																	
Papyrocranus congoensis (Nichols and La Monte, 1932)	AMNH 243993, 252281	-	-	-	-	-	-	-	x	-	-	x	-	x	-	-	x
Xenomystus nigri (Günther, 1868)	AMNH 241932, 252272	-	x	x	x	-	-	x	x	-	-	-	x	x	x	-	x
Mormyridae (28)																	
Campylomormyrus tamandua (Günther, 1864)	AMNH 244141	-	-	-	-	-	-	x	-	-	-	-	-	-	-	-	x
Cyphomyrus weeksii (Boulenger, 1902)	AMNH 244126, 241905	-	-	-	-	-	-	x	x	-	-	-	-	-	-	-	-
Cyphomyrus ghesquierei (Poll, 1945)	AMNH 244136	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x
Genyomyrus donnyi Boulenger, 1898	AMNH 244113	-	-	-	-	-	-	x	-	-	-	-	-	-	-	-	x
Gnathonemus echidnorhynchus Pellegrin, 1924	AMNH 244128, 244130	-	-	-	-	-	-	-	x	-	-	-	x	x	-	-	x
Gnathonemus petersii (Günther, 1862)	AMNH 241927, 252243	-	x	-	x	x	x	x	x	-	-	-	-	-	x	-	x
Marcusenius friteli (Pellegrin, 1904)	AMNH 242745, 252203	x	-	-	-	-	x	-	-	-	-	-	-	-	-	-	x
Marcusenius greshoffii (Schilthuis, 1891)	AMNH 252270	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x
Marcusenius intermedius Pellegrin, 1924	AMNH 241906, 241910	-	-	x	x	-	-	-	-	x	-	-	x	-	x	-	-
Marcusenius kutuensis (Boulenger, 1899)	AMNH 241911, 244140	-	x	-	x	-	x	x	-	-	-	-	x	x	-	-	x
Marcusenius moorii (Günther, 1867)	AMNH 244135, 252245	-	-	x	-	x	-	-	-	-	-	-	-	x	-	-	x
Mormyrops anguilloides (Linnaeus, 1758)	observed	x	-	-	-	x	-	-	-	-	-	-	-	-	-	x	x
Mormyrops attenuatus Boulenger, 1898	AMNH 244133	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-	x
Mormyrops nigricans Boulenger, 1899	AMNH 244131, 252254	-	x	-	-	x	-	-	-	-	-	-	x	-	-	-	x
Mormyrus caballus Boulenger, 1898	AMNH 241901, 241903	x	-	-	-	x	-	-	-	-	-	-	-	-	-	-	-
Oxymormyrus boulengeri (Pellegrin, 1900)	AMNH 252211, 252247	-	-	-	x	x	-	x	-	-	-	-	-	-	-	-	x
Petrocephalus balayi Sauvage, 1883	AMNH 241924, 244122	-	-	-	x	-	x	x	-	-	-	-	-	x	-	-	x
Petrocephalus binotatus Pellegrin, 1924	AMNH 241916, 252324	-	-	-	x	-	-	x	x	x	-	-	-	-	x	-	x
Petrocephalus odzalaensis Lavoué *et al.*, 2010	AMNH 241925, 252323	x	-	x	x	-	x	x	x	-	-	-	x	-	-	-	-
Petrocephalus zakoni Lavoué *et al.*, 2010	AMNH 243541, 244121	x	-	x	-	-	x	x	x	-	-	-	x	x	-	-	-

Table 3. ***Continued.***

	AMNH Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Pollimyrus osbornii (Nichols and Griscom, 1917)	AMNH 244118	-	-	-	-	-	-	-	-	-	-	-	-	x	-	-	x
Pollimyrus maculipinnis (Nicholas and La Monte, 1934)	AMNH 244119	-	-	-	-	-	x	-	-	-	-	-	-	-	-	-	-
Pollimyrus nigripinnis (Boulenger, 1899)	AMNH 241899, 241900	-	-	x	x	-	-	-	-	-	-	-	-	-	-	-	x
Pollimyrus schreyeni Poll, 1972	AMNH 242746, 241897	-	-	x	x	-	-	x	-	x	-	-	-	-	-	-	x
Stomatorhinus ater Pellegrin, 1924	AMNH 244116	-	-	-	-	-	-	-	-	-	-	-	-	x	-	-	-
Stomatorhinus humilior Boulenger, 1899	AMNH 252201	-	-	-	-	-	-	-	x	-	-	-	-	-	-	-	-
Stomatorhinus kununguensis Poll, 1945	AMNH 243545, 252214	-	-	-	-	-	-	-	x	x	-	-	-	-	-	-	x
Stomatorhinus patrizii Vinciguerra, 1928	AMNH 244117	-	-	-	-	-	-	x	-	-	-	-	-	-	-	-	x
GONORYNCHIFORMES																	
Phractolaemidae (1)																	
Phractolaemus ansorgii Boulenger, 1901	AMNH 252190, 252227	x	-	-	-	-	-	-	x	-	-	-	-	x	-	-	x
CHARACIFORMES																	
Hepsetidae (1)																	
Hepsetus odoe (Bloch, 1794)	AMNH 240821, 252244	x	-	-	x	x	x	x	x	-	x	-	-	-	-	x	x
Alestidae (21)																	
Alestes liebrechtsii Boulenger, 1898	AMNH 240753, 244187	x	x	-	x	-	-	x	x	x	-	-	-	-	-	-	x
Alestopetersius bifasciatus (Poll, 1967)	AMNH 244034	-	-	-	x	-	-	-	-	-	-	-	-	-	-	-	x
Alestopetersius hilgendorfi (Boulenger, 1899)	AMNH 240791, 244114	-	-	-	x	-	-	x	x	-	-	-	x	x	x	x	x
Alestopetersius sp.	AMNH 252852, 25251	-	-	-	-	-	-	x	-	-	-	-	-	-	-	x	-
Bathyaethiops greeni Fowler, 1949	AMNH 240800, 252261	x	-	x	-	x	x	x	-	-	x	-	-	-	-	x	x
Brachypetersius altus (Boulenger, 1899)	AMNH 240485, 244030	-	-	-	x	-	-	x	x	x	-	-	-	-	-	x	x
Brycinus bimaculatus (Boulenger, 1899)	AMNH 240759, 240762	-	-	x	x	-	-	x	x	-	-	-	-	-	-	-	x
Brycinus grandisquamis (Boulenger, 1899)	AMNH 240763, 244112	x	-	-	x	-	-	x	x	-	-	-	-	-	-	-	x
Brycinus poptae (Pellegrin, 1906)	AMNH 240766, 240768	x	-	-	-	-	-	-	-	-	-	-	-	x	-	-	x
Bryconaethiops boulengeri Pellegrin, 1900	AMNH 240771, 244051	x	x	x	x	-	-	x	x	x	x	-	-	x	-	-	x
Bryconaethiops microstoma Günther, 1873	AMNH 240769, 240770	-	-	-	x	-	-	-	-	x	-	-	-	-	-	-	x
Clupeocharax schoutedeni Pellegrin, 1926	AMNH 243540	-	-	-	-	-	-	-	-	-	x	-	-	-	-	-	-
Hydrocynus goliath Boulenger, 1898	observed	x	x	-	-	-	-	-	-	-	-	-	-	-	-	x	-
Hydrocynus vittatus Castelnan 1861	observed	x	x	x	x	-	-	-	-	-	-	-	-	-	-	x	x
Micralestes congicus Poll, 1967	AMNH 244027, 252259	x	-	-	-	x	-	-	-	-	-	-	-	x	-	-	x
Micralestes humilis Boulenger, 1899	AMNH 240811, 240815	-	-	x	x	-	-	x	x	x	-	-	-	-	-	-	x
Phenacogrammus aurantiacus (Pellegrin, 1930)	AMNH 240808, 240809	-	-	-	-	-	-	-	x	x	-	-	-	-	-	-	x
Phenacogrammus deheyni Poll, 1945	AMNH 244045, 252251	-	-	x	-	x	x	-	-	x	-	-	-	-	x	-	x
Phenacogrammus interruptus (Boulenger, 1899)	AMNH 240752, 247923	x	x	x	x	-	x	x	x	x	-	-	x	-	-	-	x
Phenacogrammus polli Lambert, 1961	AMNH 240793, 244044	x	x	x	x	-	-	-	-	x	x	-	-	-	-	-	x
Tricuspidalestes caeruleus (Matthes, 1964)	AMNH 252193	-	-	-	x	-	-	-	-	-	-	-	-	-	-	-	x
Citharinidae (2)																	
Citharinus gibbosus Boulenger, 1899	AMNH 244111	-	-	-	-	-	-	-	-	-	x	-	-	-	-	-	x
Citharinus macrolepis Boulenger, 1899	observed	-	-	-	-	-	-	-	-	-	-	x	-	-	-	x	x

Table 3. ***Continued.***

	AMNH Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Distichodontidae (15)																	
Belonophago hutsebouti Giltay, 1929	AMNH 241850, 241853	-	-	x	x	-	-	-	-	-	x	-	-	-	-	-	x
Distichodus decemmaculatus Pellegrin, 1926	AMNH 241855, 252263	x	-	-	-	x	-	x	x	-	x	-	-	-	-	-	x
Distichodus fasciolatus Boulenger , 1898	observed	-	-	-	-	-	-	-	-	-	-	-	x	-	-	-	x
Distichodus noboli Boulenger, 1899	AMNH 241862, 247930	x	-	-	x	-	-	-	x	-	-	x	x	-	x	-	x
Distichodus sexfasciatus Boulenger, 1897	AMNH 241854	-	-	-	-	-	-	-	-	-	-	-	x	-	-	-	x
Eugnathichthys sp.	AMNH 241647, 241650	-	-	-	-	x	-	-	-	x	-	-	x	-	-	-	-
Hemigrammocharax ocellicauda (Boulenger, 1907)	AMNH 243547, 241886	x	-	-	-	-	-	-	x	x	-	-	-	-	-	-	x
Hemigrammocharax uniocellatus (Pellegrin, 1926)	AMNH 247007	-	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-
Mesoborus crocodilus Pellegrin, 1900	AMNH 241669, 252242	x	-	x	x	x	x	x	x	-	-	-	x	x	-	x	x
Microstomatichthyoborus bashforddeani Nichols and Griscom, 1917	AMNH 244115, 257162	-	-	-	x	-	-	x	-	-	-	-	-	-	-	-	x
Nannocharax elongatus Boulenger, 1900	AMNH 247935, 241895	x	-	-	-	-	-	-	-	-	-	-	x	-	-	-	-
Nannocharax schoutedeni Poll, 1939	AMNH 241889, 247932	x	-	x	-	-	-	-	-	x	-	-	-	x	-	-	x
Neolebias gracilis Matthes, 1964	AMNH 244084, 247928	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-	x
Neolebias trilineatus Boulenger, 1899	AMNH 244084, 247928	-	x	x	x	-	x	-	-	x	-	-	x	-	-	-	x
Xenocharax crassus Pellegrin, 1900	AMNH 241651, 244024	x	x	x	x	x	x	x	x	x	x	x	-	-	x	-	-
CYPRINIFORMES																	
Cyprinidae (4)																	
Barbus humeralis Boulenger, 1902	AMNH 240446, 247929	-	-	-	x	-	-	x	-	-	-	-	-	-	-	-	x
Barbus matthesi Poll and Gosse, 1963	AMNH 240447	-	-	-	-	-	-	-	-	x	-	-	-	-	-	-	x
Barbus miolepis Boulenger, 1902	AMNH 239926, 252248	x	x	-	x	x	-	-	-	x	-	x	-	-	-	-	x
Clypeobarbus bomakandi (Myers, 1924)	AMNH 244090, 244093	-	-	-	x	-	-	x	x	-	-	-	-	-	-	-	-
SILURIFORMES																	
Claroteidae (9)																	
Anaspidoglanis macrostoma (Pellegrin, 1909)	AMNH 244142, 252225	x	-	-	-	-	-	x	-	-	-	-	-	-	-	-	x
Auchenoglanis wittei Giltay, 1930	AMNH 241988	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chrysichthys cranchii (Leach, 1818)	AMNH 244177, 244179	-	-	-	-	-	-	x	x	-	-	-	-	-	-	-	x
Chrysichthys delhezi Boulenger, 1899	AMNH 247882	-	-	-	x	-	-	-	-	-	-	-	-	-	-	-	x
Chrysichthys habereri Steindachner,1912	AMNH 244181	-	-	-	-	-	-	-	x	-	-	-	-	-	-	-	x
Chrysichthys ornatus Boulenger, 1902	AMNH 239875, 241992	-	-	-	-	-	x	x	x	-	x	-	-	-	x	-	x
Chrysichthys punctatus Boulenger, 1899	AMNH 239246, 241990	x	-	x	x	-	x	x	x	-	-	-	-	-	x	-	x
Salonga “glass catfish” new genus and species	AMNH 239657	-	-	-	-	-	-	-	-	x	-	-	-	-	-	-	-
Parauchenoglanis punctatus (Boulenger, 1902)	AMNH 241987, 253357	x	-	-	-	x	-	-	-	-	-	-	-	x	-	-	x
Schilbeidae (5)																	
Pareutropius debauwi (Boulenger, 1900)	AMNH 241970, 244145	x	-	x	x	-	-	x	-	x	-	-	x	-	x	-	x
Pareutropius mandevillei Poll, 1959	AMNH 244146, 244147	x	-	-	-	-	-	-	-	-	-	-	x	-	-	-	x
Schilbe grenfelli (Boulenger, 1900)	AMNH 241958, 247881	-	-	-	-	-	-	-	x	-	x	-	-	-	-	-	x
Schilbe laticeps (Boulenger, 1899)	AMNH 241957, 244154	-	-	-	-	-	-	-	-	-	-	-	x	x	-	-	x
Schilbe marmoratus Boulenger, 1911	AMNH 241695, 252250	x	x	x	x	x	x	x	x	x	x	-	x	x	x	-	x

TABLE 3. ***CONTINUED.***

	AMNH Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Clariidae (11)																	
Channallabes apus (Günther, 1873)	AMNH 242729, 252184	-	-	x	-	-	-	-	x	-	-	-	-	-	-	-	x
Clariallabes centralis (Poll and Lambert, 1958)	AMNH 242728	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x
Clariallabes teugelsi Ferraris, 2007	AMNH 244173	-	-	-	-	-	-	-	x	-	-	-	-	-	-	-	-
Clariallabes variabilis Pellegrin, 1926	AMNH 244174, 252234	-	-	-	-	-	-	x	x	x	-	-	-	-	-	-	-
Clarias angolensis Steindachner, 1866	AMNH 244171	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-	x
Clarias buthupogon Sauvage, 1879	AMNH 242721, 252219	x	x	x	-	-	-	-	x	-	x	-	x	-	-	-	x
Clarias gabonensis Günther, 1867	AMNH 242722, 252188	-	-	x	-	-	x	x	x	-	x	-	-	-	-	-	x
Clarias pachynema Boulenger, 1903	AMNH 244172	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-	x
Clarias platycephalus Boulenger, 1902	AMNH 242724	-	-	-	-	-	-	-	x	-	-	-	-	-	-	-	x
Clarias theodorae Weber, 1897	AMNH 244169, 244170	-	-	-	-	-	-	-	x	-	-	-	-	x	-	-	-
Heterobranchus longifilis Valenciennes, 1840	observed	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x
Malapteruridae (3)																	
Malapterurus melanochir Norris, 2002	AMNH 241986	-	-	-	-	-	-	-	-	-	-	x	-	-	-	-	x
Paradoxoglanis caudivittatus Norris, 2002	AMNH 241985	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x
Paradoxoglanis parvus Norris, 2002	AMNH 252205	-	-	-	-	-	-	-	x	-	-	-	-	-	-	-	x
Mochokidae (8)																	
Microsynodontis sp.	AMNH 242747, 243544	x	-	-	-	-	-	-	-	x	-	-	-	-	-	-	-
Synodontis aterimma Poll and Roberts, 1968	AMNH 252209	-	-	-	-	-	-	-	-	x	-	-	-	-	-	-	x
Synodontis contracta Vinciguerra, 1928	AMNH 240097, 244003	x	-	-	x	-	-	x	-	x	-	-	-	-	-	-	x
Synodontis decora Boulenger, 1899	observed	x	-	-	x	-	-	-	-	-	-	-	-	-	-	-	x
Synodontis flavitaeniata Boulenger, 1919	AMNH 240072, 244015	-	x	x	x	-	x	x	x	-	-	-	-	x	-	-	x
Synodontis greshoffi Schilthuis 1891	AMNH 244016, 244018	-	x	-	x	-	-	-	-	-	-	-	-	x	-	-	x
Synodontis nigriventris David, 1936	AMNH 241951, 241954	x	-	x	x	-	-	-	x	-	-	-	x	-	-	-	x
Synodontis schoutedeni David, 1936	AMNH 241160, 246236	x	-	-	-	-	-	-	-	-	-	-	-	x	-	-	x
Amphiliidae (3)																	
Belonoglanis tenuis Boulenger, 1902	AMNH 239577, 239578	x	-	-	-	-	x	-	-	x	-	-	-	-	-	-	x
Phractura lindica Boulenger, 1902	AMNH 245100	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phractura scaphyrhychura (Vaillant, 1886)	AMNH 243548	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x
CYPRINODONTIFORMES																	
Nothobranchiidae (4)																	
Aphyosemion sp.	AMNH 252189	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-
Epiplatys chevalieri (Boulenger, 1913)	AMNH 243553, 244060	x	-	-	x	-	-	-	x	x	-	-	-	x	-	-	x
Epiplatys multifasciatus (Boulenger, 1913)	AMNH 243550, 243551	x	-	-	-	-	-	-	-	x	-	-	-	-	x	-	x
Fenerbahce sp.	AMNH 244085, 257163	-	-	-	-	-	-	-	-	-	-	-	x	x	-	-	-
Poeciliidae (2)																	
Congopanchax brichardi (Poll, 1971)	AMNH 247927, 257164	x	-	-	-	-	-	-	-	-	x	-	-	-	-	-	x
Hylopanchax sp.	AMNH 252241	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PERCIFORMES																	

Table 3. ***Continued.***

	AMNH Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Channidae (2)																	
Parachanna insignis (Sauvage, 1884)	AMNH 244209, 252212	x	-	-	-	x	-	-	-	-	-	-	-	-	-	-	x
Parachanna obscura (Günther, 1861)	AMNH 241809, 244096	x	-	-	x	-	-	-	-	-	-	x	-	-	x	-	x
Anabantidae (9)																	
Ctenopoma acutirostre Pellegrin, 1899	AMNH 241809, 244073	x	-	-	-	-	-	-	-	x	-	x	-	x	-	-	x
Ctenopoma gabonense Günther, 1896	AMNH 241828, 252217	-	x	-	-	-	x	-	x	x	-	-	-	x	x	x	-
Ctenopoma kingsleyae Günther, 1896	AMNH 241818, 252216	x	x	-	x	-	x	x	x	-	x	-	-	x	-	-	x
Ctenopoma nigropannosum Reichenow, 1875	AMNH 241823, 241824	-	-	-	-	-	-	-	x	-	-	-	-	-	x	-	x
Ctenopoma ocellatum Pellegrin, 1899	AMNH 244061	-	-	-	-	-	-	-	-	-	x	-	-	-	-	-	x
Ctenopoma weeksii Boulenger, 1896	AMNH 241814, 244077	x	-	-	-	-	-	x	-	x	x	-	-	-	-	-	x
Microctenopoma ansorgii (Boulenger, 1912)	AMNH 241830, 257171	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x
Microctenopoma fasciolatum (Boulenger, 1899)	AMNH 241829	x	-	-	-	-	-	-	-	-	-	-	-	-	-	x	x
Microctenopoma nanum (Günther, 1896)	AMNH 244074, 252226	x	-	x	-	-	-	-	-	-	-	-	-	x	-	-	x
Cichlidae (12)																	
Congochromis dimidiatus (Pellegrin, 1900)	AMNH 244100, 252253	-	-	x	-	x	-	-	-	-	-	-	-	x	-	-	x
Congochromis sp.	AMNH 252200	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hemichromis elongatus (Guichenot, 1861)	AMNH 241798, 252187	x	x	x	x	x	x	x	-	x	-	-	x	x	x	x	x
Hemichromis lifalili Loiselle, 1979	AMNH 241781, 252223	x	-	-	-	-	-	-	-	x	x	-	-	x	x	-	x
Heterochromis multidens (Pellegrin, 1900)	AMNH 241789, 241795	x	-	-	x	-	x	x	-	x	-	-	-	-	-	-	x
Pelmatochromis nigrofasciatus (Pellegrin, 1900)	AMNH 241806, 241807	-	-	x	-	-	-	-	x	-	-	x	-	-	x	-	x
Sarotherodon galilaeus boulengeri (Pellegrin, 1903)	AMNH 244108	-	-	-	-	-	-	x	-	-	-	-	-	-	-	-	-
Tilapia bilineata Pellegrin, 1900	AMNH 242001, 242009	x	-	-	-	-	x	-	x	x	x	-	-	x	x	x	x
Tilapia congica Poll and Thys van den Audenaerde, 1960	AMNH 243549, 244101	-	-	-	x	-	-	-	-	-	x	-	-	-	-	-	x
Tilapia tholloni (Sauvage, 1884)	AMNH 241993, 241998	-	-	-	x	-	-	-	x	-	x	-	-	x	x	-	-
Tilapia sp.	AMNH 242002, 242004	x	-	-	x	-	-	x	-	-	-	-	-	-	-	-	-
Tylochromis aristoma Stiassny, 1989	AMNH 241777, 241780	x	-	-	-	-	-	-	x	x	x	-	-	-	-	x	x
Eleotridae (2)																	
Kribia nana (Boulenger, 1901)	AMNH 242756	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-	x
Kribia uellensis (Boulenger, 1913)	AMNH 252183, 242754	x	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-

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